In contrast to the FP engine situation, where ATP server 14 is associated with an SCP engine there is usually significant representation relative to allocations as well as, for example, order timing and lot sizing constraints. As a result, LFM 22 is able to pass these constraints along from component ATP request 32 to ATP server 14. In particular with respect to SCP engines, LFM 22 may need to distinguish between quotation and promise workflows since the initial quotation request to ATP server 14 may be only an inquiry that does not consume any allocated product or available material or capacity. Resulting quotation responses are sent from ATP server 14 back to LFM 22. In EDI-based exchanges, however, a quotation request to ATP server 14 may actually result in an ATP-consuming promise.

LFM 22 evaluates the quotation response from ATP server 14 according to the business constraints encapsulated in the originating component ATP request 32. Once again, the processing requirements of this evaluation depend on the sophistication of the planning engine associated with ATP server 14. With an SCP engine, this quotation response may encompass the business constraints such that processing responsibility of LFM 22 is limited. In the case of an FP engine, however, LFM 22 may need to closely evaluate the quotation response before a component quotation 34 is generated. ATP server 14 may be capable of returning one or more quotation responses, each of which must be evaluated relative to the applicable business constraints.

After evaluating availability, LFM 22 computes a component quotation 34 that includes product availability information and rules on how fulfillment server 16 may mutate component quotation 34. LFM 22 sends component quotation 34 back to fulfillment server 16. If multiple quotation responses are deemed valid according to the constraints, LFM 22 generates and sends multiple component quotations 34 back to fulfillment server 16. If component ATP request 32 fails to yield a valid component quotation 34, LFM 22 may send an annotated failure notification to fulfillment server 16. Such failure notifications may include, for example, "insufficient product quantities" or "unable to meet shipment delivery or lot sizing requirements." As described below, fulfillment server 16 mutates component quotations 34, in accordance with the information and rules they provide, such that

together component quotations 34 satisfy the business constraints applied at fulfillment server 16 or asserted along with ATP request 30.

Component Quotation Attributes

In one embodiment, each component quotation is an object with the following attributes or supporting the following information, in any appropriate combination and without limitation: (1) *component quotation ID* - assigned at LFM 22 and/or ATP server 14 when it creates the component quotation; (2) *component request ID*; (3) *fulfillment server ID*; (4) *product ID* - may not directly correspond to product specified in component request since an alternate or substitute may have been specified; (5) *product UOM* - may not correspond to one specified in component request since ATP server 14 may have responded in a different UOM than that requested; (6) *promise quantity* - quantity of product for the component quotation delivery; (7) *promise date* - date product delivery is promised to ship by ATP server 14, which represents shipment from manufacturing or distribution location rather than customer delivery date; (8) *promise lot*; (9) *promise attributes* - list of category/attribute combinations for component quotation; (10) *promise type* - type of response, which LFM 22 updates in one embodiment (e.g., "as requested," "alternate/substitute," "option"); (11) *unit price* - unit price for product in base currency of ATP server 14; (12) *quotation status* - LFM 22 and/or ATP server 14 updates, indicating whether quotation failed or succeeded; and (13) *failure reason* - brief description of reason quotation failed (e.g., insufficient supply availability, business constraints could not be met), which LFM 22 and/or ATP servers 14 evaluates, updates, and sends to fulfillment server 16

Process Component Quotations [Fulfillment Server]

Once fulfillment server 16 has processed and sent component ATP requests 32 to LFMs 22, fulfillment server 16 monitors the completion of the resulting component quotations 34. In one embodiment, quotation 36 may be deemed complete when each component ATP request 32 has received at least one component quotation 34 or failure notification. Suppliers may respond to the component ATP requests 32 with multiple acceptable ATP options. Fulfillment server 16 uses these component quotations 34 to generate and send to client 12 a multi-dimensional (variable on

product options, lead time, and price, for example) quotation 36. When all the component quotations 34 have been received and quotation 36 is complete, fulfillment service 16 evaluates the overall quotation 36 according to the business constraints specified in the originating ATP request 30. As a result, fulfillment server 16 determines whether the requirements for ATP request 30 have been met and filters any non-conforming supplier responses from the unified quotation 36 to be presented to client 12. In one embodiment, fulfillment server 16 mutates component quotations 34, according to the information and rules they provide, such that together component quotations 34 satisfy the business constraints applied at fulfillment server 16 or asserted along with ATP request 30. Because some clients 12 may not be capable of handling a multi-dimensional quotation 36, the client interface of fulfillment server 16 may also provide for more restrictive use of quotation information according to particular needs.

In general, fulfillment server 16 attempts to provide a "best fit" response to client 12, according to its assessment of quotation 36 against customer and supplier business constraints. If, for example, the *ship on-time* attribute for ATP request 30 specifies that shipment must be received on time, and one or more component quotations 34 are in some way insufficient, fulfillment server 16 may assign a failure status to ATP request 30 in its entirety. Fulfillment server 16 may simply pass along to client 12 failure status annotations received from LFMs 22. Instead or in addition, fulfillment server 16 may assign failure evaluation annotations of its own. For example, while LFMs 22 may have generated valid component quotations 34, fulfillment server 16 may determine a failure of the overall quotation 36 based on quotation pricing not meeting business constraints for the customer. If a particular request line-item yields multiple component quotations 34, each component quotation 34 must be evaluated relative to the specified constraints. All valid component quotations 34 for the request line-item are transmitted to client 12 in the form of quotation 36 using network 18.

If the ATP server response is satisfactory in one or more ways (based on the products, lead times, or prices, singly or in any combination) then fulfillment server 16 may perform additional functions before generating quotation 36 for communication to client 12. For example, client 12 may require calculation of